

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE
 in its capacity as elected Office

Date of mailing (day/month/year) 04 April 2001 (04.04.01)	
International application No. PCT/US00/14696	Applicant's or agent's file reference 2923-WO
International filing date (day/month/year) 26 May 2000 (26.05.00)	Priority date (day/month/year) 28 May 1999 (28.05.99)
Applicant BIRD, Timothy, A. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
 20 December 2000 (20.12.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer R. Forax Telephone No.: (41-22) 338.83.38
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Form PCT/IB/331 (July 1992)

US0014696

BEST AVAILABLE COPY

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : Please See Extra Sheet.

US CL : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P ----- Y,P	Database GenBank, on STN. US National Library of Medicine (Bethesda MD), No. AB035697. Watanabe et al. 'Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development'. FEBS Lett. 469 (1), 19-23, April 2000.	1-3, 7, 10 ----- 4-6, 8-9, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB041925. Watanabe et al. 'Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development. FEBS Lett. 469 (1) 19-23, April 2000.	1-3, 7, 10 ----- 4-6, 8-9, 11-16



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document published on or after the international filing date

L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination, being obvious to a person skilled in the art

Z

document member of the same patent family

Date of the actual completion of the international search

13 SEPTEMBER 2000

Date of mailing of the international search report

04 OCT 2000

Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

REBECCA PROUTY

Telephone No. (703) 308-0196

INTERNATIONAL SEARCH REPORT

 International application No.
 PCT/US00/14696

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	SU, Y. et al. NIK is a New Ste20-Related Kinase That Binds NCK and MEKK1 and Activates the SAPK/JNK Cascade Via a Conserved Regulatory Domain. EMBO J. 1997, Vol. 16, No. 6, pages 1279-1290. see entire document.	1-3, 5, 7-10 ----- 4, 6, 11-16
X --- Y	YAO, Z. et al. A Novel Human STE20-Related Protein Kinase, HGK, That Specifically Activates the c-Jun N-Terminal Kinase Signaling Pathway. J. Biol. Chem. 22 January 1999, Vol. 274 No. 4, pages 2118-2125, see entire document.	1-3, 5, 7-10 ----- 4, 6, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB026289. Saito et al. "Direct Submission". October 1999.	1-3, 7, 10 ----- 4-6, 8-9, 11-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AI469033. March 1999	1-2, 7 ----- 3-6, 8-16
X --- Y	PICCIOTTO, M.R. et al. Calcium/Calmodulin-Dependent Protein Kinase I. J. Biol. Chem. 15 December 1993, Vol. 268, No. 35, pages 26512-26521. see entire document.	1-4, 7-10 ----- 5, 6, 11-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AA018361. NCI-CGAP, July 1996.	1-2, 7 ----- 3-6, 8-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB011123, Ohara et al. "Direct Submission". April 1998.	1, 2, 7 ----- 3-6, 8-16
X,P ----- Y,P	FU, C.A. et al., TNK, A Novel Member of the Germinal Center Kinase Family That Activates the c-Jun N-Terminal Kinase Pathway and Regulates the Cytoskeleton. J. Biol. Chem. October 1999, Vol. 274, No. 43, 30729-30737, see entire document	1-3, 7-10 ----- 4-6, 11-16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER:
IPC (7):

C12N 15/54, 15/11, 15/63, 9/12, 1/21, 5/10, 15/09; C07K 16/40; C12Q 1/48

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

REC'D 02 OCT 2001

WIPO

PCT

Applicant's or agent's file reference 2923-WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US00/14696	International filing date (day/month/year) 26 MAY 2000	Priority date (day/month/year) 28 MAY 1999
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant IMMUNEX CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

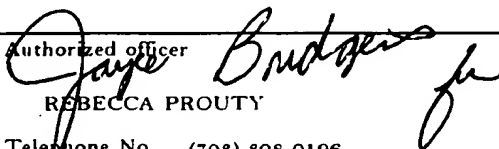
2. This REPORT consists of a total of 4 sheets.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 20 DECEMBER 2000	Date of completion of this report 24 AUGUST 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer  REBECCA PROUTY
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0196

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/14696

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☒ the description:
pages 1-74, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____
- ☒ the claims:
pages 75-77, as originally filed
pages NONE, as amended (together with any statement) under Article 19
pages NONE, filed with the demand
pages NONE, filed with the letter of _____
- ☒ the drawings:
pages 1-6, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____
- ☒ the sequence listing part of the description:
pages 1-19, as originally filed
pages NONE, filed with the demand
pages NONE, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☒ contained in the international application in printed form.
- ☒ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

**Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/14696

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. statement

Novelty (N)

Claims 6, 11-16

YES

Claims 1-5, 7-10

NO

Inventive Step (IS)

Claims none

YES

Claims 1-16

NO

Industrial Applicability (IA)

Claims 1-16

YES

Claims none

NO

2. citations and explanations (Rule 70.7)

Claims 1-3, 5 and 7-10 lack novelty under PCT Article 33(2) as being anticipated by Su et al.

Su et al. teach murine NIK, nucleotide sequences, vectors and host cells encoding therefor, expression of the protein in mammalian cells and antibodies to the protein. Murine NIK is 83% identical to SEQ ID NO:8 and comprises a sequence identical to residues 149-175 of SEQ ID NO:8. The gene will hybridize to SEQ ID NO:1 under moderate stringency conditions.

Claims 1-3, 5 and 7-10 lack novelty under PCT Article 33(2) as being anticipated by Yao et al.

Yao et al. teach human HGK, nucleotide sequences, vectors and host cells encoding therefor, expression of the protein in mammalian cells and antibodies to the protein. Human HGK is 85% identical to SEQ ID NO:8 and comprises a sequence identical to residues 149-175 of SEQ ID NO:8. The gene will hybridize to SEQ ID NO:1 under moderate stringency conditions.

Claims 1, 2 and 7 lack novelty under PCT Article 33(2) as being anticipated by GenBank Accession No. A1469033.

GenBank Accession No. A1469033 teach a human EST nucleotide sequences, vectors and host cells encoding therefor which is 87 % identical to SEQ ID NO:4. The gene will hybridize to SEQ ID NO:4 under moderate stringency conditions.

Claims 1-4, and 7-10 lack novelty under PCT Article 33(2) as being anticipated by Piciotto et al.

Piciotto et al. teach rat calcium/calmodulin-dependent protein kinase I, nucleotide sequences, vectors and host cells encoding therefor, and expression of the protein in bacteria. Rat calcium/calmodulin-dependent protein kinase I is 78% identical to SEQ ID NO:10 and comprises a sequence 88% identical to residues 134-169 of SEQ ID NO:10. The gene will hybridize to SEQ ID NO:8 under moderate stringency conditions.

(Continued on Supplemental Sheet.)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US00/14696

Supplemental B x

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): C12N 15/54, 15/11, 15/63, 9/12, 1/21, 5/10, 15/09; C07K 16/40; C12Q 1/48 and US Cl.: 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):

Claims 1, 2 and 7 lack novelty under PCT Article 33(2) as being anticipated by GenBank Accession No. AA018361.

GenBank Accession No. AA018361 teach a human EST nucleotide sequences, vectors and host cells encoding therefor which is 88 % identical to SEQ ID NO:5. The gene will hybridize to SEQ ID NO:5 under moderate stringency conditions.

Claims 1, 2 and 7 lack novelty under PCT Article 33(2) as being anticipated by GenBank Accession No. AB011123.

GenBank Accession No. AB011123 teach a human EST nucleotide sequences, vectors and host cells encoding therefor which is 100 % identical to SEQ ID NOS:6 and 7. The gene will hybridize to SEQ ID NOS:6 and 7 under moderate stringency conditions.

Claims 4, 6 and 11-16 lack an inventive step under PCT Article 33(3) as being obvious over Su et al. or Yao et al.

Su et al. and Yao et al. are discussed above. They do not teach bacterial expression of the disclosed kinases, monoclonal antibodies thereto, or assays for inhibitors or activators of the disclosed kinases. As Su et al. and Yao et al. teach that the disclosed kinases are involved in regulation of the JNK signal transduction pathway, it would have been obvious to one of ordinary skill in the art to produce large quantities of these proteins by expression in bacteria, to make monoclonal antibodies thereto, for use in identification and purification of these proteins and to screen for activators and inhibitors to these kinases as compounds which regulate the activity of the proteins would be expected to be useful for regulating the JNK signal transduction pathway.

----- NEW CITATIONS -----

NONE

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
7 December 2000 (07.12.2000)

PCT

(10) International Publication Number
WO 00/73468 A1

(51) International Patent Classification⁷: C12N 15/54,
15/11, 15/63, 9/12, 1/21, 5/10, 15/09, C07K 16/40, C12Q
1/48

(74) Agent: SPRUNGER, Suzanne, A.; 51 University Street,
Seattle, WA 98101 (US).

(21) International Application Number: PCT/US00/14696

(22) International Filing Date: 26 May 2000 (26.05.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/136,781 28 May 1999 (28.05.1999) US

(71) Applicant (for all designated States except US): IM-
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Street, Seattle, WA 98101 (US).

(72) Inventors; and

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WA 98110 (US). VIRCA, G., Duke [US/US]; 16690 SE
50th Place, Bellevue, WA 98006 (US). MARTIN, Unja
[US/US]; 928 NW 64th Street, Seattle, WA 98107 (US).
ANDERSON, Dirk, M. [US/US]; 3616 NW 64th Street,
Seattle, WA 98107 (US).

(81) Designated States (national): AE, AL, AM, AT, AU, AZ,
BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK,
DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL,
IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU,
LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT,
RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA,
UG, US, UZ, VN, YU, ZA, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian
patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European
patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE,
IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG,
CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

- With international search report.
- Before the expiration of the time limit for amending the
claims and to be republished in the event of receipt of
amendments.

For two-letter codes and other abbreviations, refer to the "Guid-
ance Notes on Codes and Abbreviations" appearing at the begin-
ning of each regular issue of the PCT Gazette.

(54) Title: NOVEL MURINE AND HUMAN KINASES

(57) Abstract: The invention is directed to purified and isolated novel murine and human kinase polypeptides, the nucleic acids encoding such polypeptides, processes for production of recombinant forms of such polypeptides, antibodies generated against these polypeptides, fragmented peptides derived from these polypeptides, and the uses of the above.

WO 00/73468 A1



SEQUENCE LISTING

<110> Bird, Timothy A.
 Virca, George Duke
 Martin, Unja
 Anderson, Dirk M.

<120> NOVEL MURINE AND HUMAN KINASES

<130> 2923-WO

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<212> DNA

<213> Mus musculus

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<212> DNA

<213> Homo sapiens

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 <212> PRT
 <213> Mus musculus

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Asn Gly Thr Tyr Gly Gln Val Tyr Lys Gly Arg His Val Lys Thr Gly
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Gln Leu Ala Ala Ile Lys Val Met Asp Val Thr Glu Asp Glu Glu Glu
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Glu Ile Lys Gln Glu Ile Asn Met Leu Lys Lys Tyr Ser His His Arg
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Val Thr Asp Leu Val Lys Asn Thr Lys Gly Asn Ala Leu Lys Glu Asp
115 120 125

Cys Ile Ala Tyr Ile Cys Arg Glu Ile Leu Arg Gly Leu Ala His Leu
130 135 140

His Ala His Lys Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu
145 150 155 160

Leu Thr Glu Asn Ala Glu Val Lys Leu Val Asp Phe Gly Val Ser Ala
165 170 175

Gln Leu Asp Arg Thr Val Gly Arg Arg Asn Thr Phe Ile Gly Thr Pro
180 185 190

Tyr Trp Met Ala Pro Glu Val Ile Ala Cys Asp Glu Asn Pro Asp Ala
195 200 205

Thr Tyr Asp Tyr Arg Ser Asp Ile Trp Ser Leu Gly Ile Thr Ala Ile
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Glu Met Ala Glu Gly Ala Pro Pro Leu Cys Asp Met His Pro Met Arg
225 230 235 240

Ala Leu Phe Leu Ile Pro Arg Asn Pro Pro Pro Arg Leu Lys Ser Lys
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Lys Trp Ser Lys Lys Phe Thr Asp Phe Ile Asp Thr Cys Leu Ile Lys
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Tyr Arg Ala Ser Cys Leu Leu Asp Gly Val Pro Val Ala Leu Lys Lys
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Val Gln Ile Phe Asp Leu Met Asp Ala Lys Ala Arg Ala Asp Cys Ile
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 Tyr Tyr Ala Ser Phe Ile Glu Asp Asn Glu Leu Asn Ile Val Leu Glu
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<211> 355

<212> PRT

<213> Mus musculus

<400> 10

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 Asp Ser Pro Tyr Trp Asp Asp Ile Ser Asp Ser Ala Lys Asp Phe Ile
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 260 265 270
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 Lys Trp Arg Gln Ala Phe Asn Ala Thr Ala Val Val Arg His Met Arg
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 Arg Leu Gln Leu Gly Ser Ser Leu Asp Ser Ser Asn Ala Ser Val Ser
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His Pro His Ile Ile Ala Ile His Glu Val Phe Glu Asn Ser Ser Lys
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His Arg Asp Leu Lys Leu Glu Asn Ile Leu Leu Asp Ala Asn Gly Asn
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Ile Lys Ile Ala Asp Phe Gly Leu Ser Asn Leu Tyr His Lys Gly Lys
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Phe Leu Gln Thr Phe Cys Gly Ser Pro Leu Tyr Ala Ser Pro Glu Ile
 210 215 220

Val Asn Gly Lys Pro Tyr Val Gly Pro Glu Val Asp Ser Trp Ser Leu
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Gly Val Leu Leu Tyr Ile Leu Val His Gly Thr Met Pro Phe Asp Gly
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 Gln Asp His Lys Thr Leu Val Lys Gln Ile Ser Asn Gly Ala Tyr Arg
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 Glu Pro Pro Lys Pro Ser Asp Ala Cys Gly Leu Ile Arg Trp Leu Leu
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 325 330 335
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Gly Asp Leu Ser Arg Phe Ile His Thr Arg Arg Ile Leu Pro Glu Lys
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 His Gln His Lys Val Ile His Arg Asp Ile Lys Gly Gln Asn Val Leu
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<213> Artificial Sequence

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primer

<400> 16

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3

INTERNATIONAL SEARCH REPORT

 International application No.
PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : Please See Extra Sheet.

US CL : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 536/23.1, 23.2, 435/194, 320.1, 252.3, 325, 15; 530/387.9

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P ----- Y,P	Database GenBank, on STN. US National Library of Medicine (Bethesda MD), No. AB035697. Watanabe et al. 'Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development'. FEBS Lett. 469 (1), 19-23, April 2000.	1-3, 7, 10 ----- 4-6, 8-9, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB041925. Watanabe et al. 'Molecular cloning of MINK, a novel member of mammalian GCK family kinases, which is up-regulated during postnatal mouse cerebral development. FEBS Lett. 469 (1) 19-23, April 2000.	1-3, 7, 10 ----- 4-6, 8-9, 11-16

☒ Further documents are listed in the continuation of Box C.
 ☐ See patent family annex.

* Special categories of cited documents:	*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
A document defining the general state of the art which is not considered to be of particular relevance	*X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
B earlier document published on or after the international filing date	*Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
L document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Z* document member of the same patent family
O document referring to an oral disclosure, use, exhibition or other means	
P document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

13 SEPTEMBER 2000

Date of mailing of the international search report

04 OCT 2000

 Name and mailing address of the ISA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

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REBECCA PROUTY

Telephone No. (703) 308-0196

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/14696

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	SU, Y. et al. NIK is a New Ste20-Related Kinase That Binds NCK and MEKK1 and Activates the SAPK/JNK Cascade Via a Conserved Regulatory Domain. EMBO J. 1997, Vol. 16, No. 6, pages 1279-1290. see entire document.	1-3, 5, 7-10 ----- 4, 6, 11-16
X --- Y	YAO, Z. et al. A Novel Human STE20-Related Protein Kinase, HGK, That Specifically Activates the c-Jun N-Terminal Kinase Signaling Pathway. J. Biol. Chem. 22 January 1999, Vol. 274 No. 4, pages 2118-2125, see entire document.	1-3, 5, 7-10 ----- 4, 6, 11-16
X,P ----- Y,P	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB026289. Saito et al. "Direct Submission". October 1999.	1-3, 7, 10 ----- 4-6, 8-9, 11-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AI469033. March 1999	1-2, 7 ----- 3-6, 8-16
X --- Y	PICCIOTTO, M.R. et al. Calcium/Calmodulin-Dependent Protein Kinase I. J. Biol. Chem. 15 December 1993, Vol. 268, No. 35, pages 26512-26521. see entire document.	1-4, 7-10 ----- 5, 6, 11-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AA018361. NCI-CGAP, July 1996.	1-2, 7 ----- 3-6, 8-16
X --- Y	Database GenBank on STN. US National Library of Medicine (Bethesda MD), No. AB011123, Ohara et al. "Direct Submission". April 1998.	1, 2, 7 ----- 3-6, 8-16
X,P ----- Y,P	FU, C.A. et al., TNIK, A Novel Member of the Germinal Center Kinase Family That Activates the c-Jun N-Terminal Kinase Pathway and Regulates the Cytoskeleton. J. Biol. Chem. October 1999, Vol. 274, No. 43, 30729-30737, see entire document	1-3, 7-10 ----- 4-6, 11-16

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/14696

A. CLASSIFICATION OF SUBJECT MATTER:

IPC (7):

C12N 15/54, 15/11, 15/63, 9/12, 1/21, 5/10, 15/09; C07K 16/40; C12Q 1/48